

Foreign workers in Foreign Firms: evidence from Africa

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Abstract

Foreign workers play a crucial role in ‘greasing the wheels’ of international businesses as they represent the main agents in charge of operations as well as the interface through which resources and information flows both within the firm and between the local subsidiary and the host country economy. In this study we investigate the determinants of the number of foreign workers – i.e. expatriates – employed in foreign firms investing in a large sample of Sub-Saharan African countries. We employ a novel firm-level database (UNIDO Africa Investor Survey 2010) which allows us to shed lights on the firm-level as well as the host country characteristics which shape the demand of foreign workers in developing countries. We also present new results on the different behaviours of foreign investors originating from emerging and developing economies (South-South Investors) compared to investors from rich countries (North-South Investors).

Keywords: foreign direct investments; expatriates; labour demand; Africa

1. Introduction

The internationalization of production entails management challenges for firms, stemming from the additional complexity of conducting foreign operations and of coordinating the different units of a firm across borders. These challenges are particularly evident during the initial stages of activity, in particular in the context of developing countries. Subsidiaries located in foreign countries need to develop production and administrative capacities and to build the practices and organizational tools that allow a smooth integration of the foreign unit within the rest of the firm. Expatriates play a crucial role in this process as they represent the main channel of knowledge transfer between foreign subsidiaries and the headquarter and they are often the main agents in charge of management and operational capacity building.

Several studies have analysed the determinant of expatriates in foreign business. Most studies are limited to a particular class of foreign workers – often managers – or to foreign firms originating from a given source country (Belderbos and Heijltjes 2005; Gaur et al 2007 on Japanese multinational) or investing in a single host country (Tsang 1999 and Leung et al. 2009 on China; Tzeng 1995 on Taiwan).

The aim of this paper is to investigate the determinants of the number of foreign workers by a large set of foreign investors – approximately 1400 – operating in 16 Sub-Saharan African countries using a rich firm-level database recently developed by UNIDO, Africa Investor Survey (henceforth AIS 2010, see UNIDO 2011). To our knowledge this is the first paper with a specific focus on the African continent which represents the ‘last frontier’ of international investments¹. The African continent is also particularly interesting since it has attracted investments both from developed countries (North) and from other developing and emerging economies (South). Given the large set of origin and destination countries (87 and 16, respectively), our analysis has also the ambition of shedding light onto the differences in the determinants of the number of foreign workers for investors belonging to different business culture and environments.

We find that the firms' demand for foreign workers depend positively on the knowledge intensity of their business, and negatively on their degree of embeddedness in the host country economy; these findings lend support to the ‘knowledge creation and learning’ role attributed to expatriates by early theoretical arguments (Downes and Thomas 2000; Edstrom and Galbraith 1977, 1994). We also

¹ UNCTAD (2014) reports that in 2013 investments toward the African continent rose by 4% over the previous year, reaching 57 billion \$.

find that Greenfield investments generate a higher share of foreign workers but a firm's experience in the host country, i.e. years since the operation started, mitigates this initial effect. Finally, our results suggest that foreign investors originating from emerging and/or developing countries – contrary to those originating from rich countries – are more sensitive to wage differentials between origin and destination country; thus when the wage gap is high these investors are more likely to substitute foreign workers with host country nationals. This finding provides novel empirical insights on the expatriation cost issue. We find evidence of the importance of the quality and availability of human capital in the host country as a determinant of foreign firm staffing strategies. In addition, a better Institutional quality and lower levels of corruption are also associated with a reduced number of foreign expatriates. This result has important policy implications for those developing countries wishing to boost labour demand of host country nationals by foreign firms. Our study contributes, given its specific focus on the relatively under-investigated phenomenon of foreign firms behaviour in Africa, to both the international business and development economics literatures. To our knowledge this is the first study which investigates the demand of expatriates at all levels – i.e. not exclusively in management positions – in Sub-Saharan Africa.

The paper is organized as follows: In *Section 2* we discuss testable hypothesis on the link between firm characteristics and foreign firms demand of foreign workers in their operation oversea. *Section 3* describes the most relevant features of the data employed in the analysis. *Section 4* explains in details the methodology and the variables used in the parametric estimates. The empirical results are presented in *Section 5*.and conclusive remarks are reported in *Section 6*.

2. Why foreign firms use foreign workers?: A short literature review and testable hypothesis

Firms investing abroad, have two staffing alternatives: (i) employ a parent country national or a third country national (most likely working for the same company); or (ii) assign a host country worker. There are several advantages of employing a host country worker. The low cost of a local worker compared with the high cost of expatriates (Reynolds 1997) is one of the most relevant, notably in a developing country. Depending on the type of business and the targeted market, host country workers can be more suitable in performing the assigned tasks when the effectiveness of these tasks crucially depends on interactions with the host country institutional, cultural and socio-economic environment (Harzing 2001). For example, for a marketing position, a service firm targeting the local market is more likely to employ a domestic/local employee than a foreign employee.

In spite of these potential disadvantages related to a lack of or reduced knowledge on the local economy, foreign firms extensively use expatriates in their operations abroad. The literature identifies some key functions that expatriates undertake in foreign affiliates. In what follows, we briefly describe some of the stylized facts established by previous authors and discuss the main hypothesis that are tested in the present study.

Foreign workers as a means of knowledge transfer

Knowledge is fundamental source of competitive advantage for the firm (Argote and Ingram, 2000; Grant, 1996; Peteraf, 1993). According to Bartlett and Ghoshal (1992b), the main challenge for internationalized firms is to create a learning organization able to develop and integrate knowledge throughout their cross-border activity. Evidence shows that MNC's subsidiaries rely heavily on knowledge created at the parent company level (Caves 1996). Hence, the knowledge transfer from the parent company to the controlled affiliates becomes a crucial competitive factor. To transfer knowledge, MNCs can efficiently exploit their internal circuit of human capital movement (Gupta and Govindarajan, 2000). The existing literature emphasizes the importance of expatriates as an effective mechanism through which the tacit knowledge is transferred between the different units of a firm (Athanassiou and Nigh 1999). The use of qualified staff to transfer the firm's tacit know-how is deemed necessary since it is usually individual-specific, not codified or easily formalized in standard operations (Polanyi 1962; Hocking et al. 2004). From the management prospective, expatriates are both a means of knowledge transfer and knowledge transfer facilitators (Fang et al. 2010). On one side, they transfer firm-specific organizational and management practices (Tsang 1999), on the other side, they coordinate the parent-subsidiary or subsidiary-subsidiary knowledge exchange channels (Edstrom and Galbraith 1977).

Given the crucial role of expatriates as gatekeeper and transmission mechanisms of the firm's knowledge base, their use is expected to be more intensive in those sectors using more extensive knowledge-based capabilities (the IT sector in Millar and Salt 2007; or firms offering financial services in Beaverstock, 2002). Several studies compare the use of expatriates between sectors with relevant differences in technological content and management complexity. Brewster (1988), for example, asserts that the technology intensive sectors demanding a specific type of expertise, such as electronics and petroleum, require more expatriates than transportation or food industries. In our empirical analysis we test the following hypothesis:

Hypothesis 1: *Foreign firms having higher level of knowledge capabilities, ceteris paribus, will employ more foreign workers, in particular the highly-skilled ones.*

To date, only few empirical studies have investigated the relationship between knowledge transfer and the use of foreign workers by firms investing abroad (see Gupta and Govindarajan 2000, Bjorkman et al. 2004). These studies focus mainly on expatriate managers moving from MNC's headquarter to subsidiaries. Delios and Bjorkman (2000) studying Japanese affiliates in China and the USA found no evidence of a relationship between the marketing and knowledge capabilities of the parent firm and the transfer of expatriates in the foreign subsidiaries. Similarly, using the R&D intensity to proxy for the knowledge intensity of the parent firm, Harzing (2001) found no impact of knowledge intensity on the usage of expatriate managers. To our knowledge no studies have tested the importance of firm's knowledge intensity in the context of FDI inflows in developing countries. Given the generally weak human capital endowment, we expect that the use of expatriates might be more accentuated in the context of poor host countries.

Local embeddedness, vertical integration and the use of foreign workers

Following Schuler et al. (1993), the two major strategic concerns of the MNCs are; (i) the necessity to manage the linkages between a large number of units operating in different countries; and (ii) to manage the internal operations and interdependences with the local environment. Inter-unit management often requires coordination among units' operations and between units and headquarter operations. Coordination is essential, especially when the MNC's products and activities are vertically integrated, i.e. when each unit outputs are used as inputs in the production process of the other units (Bonache et al. 2001). Information flows are crucial to align the parent company strategic activity with the local activity. For Edstrom and Galbraith (1977), expatriates create efficient communication networks by personally moving to subsidiaries and transmitting relevant information. Therefore, the main task of expatriates is the coordination and control of the single subsidiary in order to ensure the compliance of their practices with the companies' business objectives and shared values (Bartlett and Ghoshal, 1991). Following the international business literature on expatriates, vertically integrated firms need higher levels of coordination given the intra-organizational interdependency of their operations (Richards 2001). These considerations lead to the following testable hypothesis:

Hypothesis 2a: *Vertically integrated firms use more foreign employees than non-integrated firms.*

On the contrary, locally embedded subsidiaries develop inter-organizational interdependencies with local partners. This operational structure leads to a broader horizontal interaction with local firms, rather than a vertical interaction. The need for a greater autonomy of the foreign affiliate will be more evident, for example, for firms that acquire a relevant part of their inputs from local firms. In this case, foreign units need relatively less informational exchange and less coordination and control from the parent company (Boyacigiller 1990). Hence, companies that have stronger local linkages are more prone to employ local workers – in particular, but not necessarily only, in managerial and high-skilled positions. In this regard, Belderbos and Heijltjes (2005) found that firms building local partnerships are less likely to appoint a parent country national as a managing director. Moreover, firms having local linkages are more likely to establish relations of trust and collaboration with locals that could lead to a more extensive use of local human resources. This is particularly true for firms aiming to serve the local market. Orientation toward local sales requires the adaptation of the product to the local demand. Compared to foreign employees, local staff have a better knowledge of the local market and of local consumers specific tastes (Peixoto 2001), local norms (Gaur et.al 2007), customs and language (Harzing 2001).

The usage of foreign workers could also be influenced by the business partnership the foreign investor has with local partners. For instance, when creating a joint-venture with a local partner, we would expect that the foreign investor has less discretion to appoint home country nationals in both managerial and production positions. However, several studies show that control on staffing policy may depend also on other issue such as the ownership share (Wang et al. 1998) and the policy restrictions on equity ownership existing in some countries (Delios and Bjorkman 2000). These considerations lead to following hypothesis:

Hypothesis 2b: *A firm having: (i) larger inter-organizational relations (linkages) with local firms; (ii) a local partnership and; (iii) to target the local market, will employ less foreign workers.*

Mode of entry and firm's experience in the host country

The time when the firm starts to operates in the country of investment might be an important factor in shaping the demand of expatriates. Resource dependence theory asserts that young subsidiaries are less autonomous and rely on the parent company resources, including human resources. It takes time for newly established foreign firms to build up the necessary capabilities, including appraisal of the local context and local staffing development (Peng and Beamish 2011). Training of local

employees generally requires time and often such activities are among the main tasks that expatriates accomplish during their assignment. Time since the initial investment took place may have two effects on the number of foreign workers employed by the firm: (i) the number of expatriates decreases since training becomes less resource demanding in later stages of the firm's establishment, and (ii) foreign workers are gradually replaced by trained host country employees (Peixoto 2001, Gong 2003). The replacement of foreign workers by local workers – in particular at a managerial level – at different growth stages of the firm is reported in early and later studies (Franko 1973; Riaz et al. 2014). However, the appointment and replacement with local staff may depend on the skills available at local level. Indeed, according to Edstrom and Galbraith (1977), MNE's use foreign staff to fill the highly qualified and technical positions, especially in developing countries where skills are scarce. In relation to local embeddedness, over time, the subsidiary gains more confidence with the environment, more exchanges with local partners and consequently gains more operational autonomy. Hence the coordination and control from the parent company becomes less relevant, meaning lower levels of expatriate staffing. In contrast, Gaur et al. (2007) concludes that in the presence of a distant institutional environment between the origin and the destination country of the firm, age could have the opposite relation and lead to an over-time increase in the use of parent country managers. Over time, the local legitimacy² of foreign firms increases the ability to overcome local environment hurdles using parent country managers.

When considering the mode of entry, greenfield investment - as compared to the acquisition or privatization of an existing company - presents some operational specificities that generally require a more intensive use of expatriates (at least in the initial stage). Most of the organizational and production processes are to be built ex-novo, requiring a more conspicuous employment of foreign staff at all levels of skills (Peixoto 2001; Harzing 2001) and of foreign trainers of local employees. Meyer and Estrin (2001) assert that usually in acquisitions, firms tend to use mainly the assets of the acquired firm, including managerial capabilities. Additionally, acquisitions and privatization may include legal restrictions aimed to preserve the existing employment in those firms. It is likely that the new owner would be less independent in applying own staffing policy.

However, we should expect that over time the higher employment of foreign workers by greenfield investors would be absorbed as more and more local workers substitutes them. The considerations above lead to the following hypothesis we aim to test:

Hypothesis 3a: *Companies that operate in a given country for a longer period, employ less foreign workers than newly established companies.*

² With local legitimacy Gaur et al. (2007) means the pressure to generate spillovers such as local employment or/and knowledge transfer to local firms.

Hypothesis 3b: *Firms making greenfield investments use more foreign workers than those making brownfield investments. This effect moderates over time.*

3. The determinants of foreign workers in a foreign firm: empirical analysis

Data description

Our study on the determinants of the demand for foreign workers uses firm-level data collected by the United Nation Industrial Development Organization (UNIDO) in 19 Sub-Saharan African countries³ in 2009-2010, AIS (2010). AIS 2010 surveys both manufacturing and service firms. The database contains detailed information on a large sample of foreign investors as well as domestic firms: firms characteristics, sector of activity, organizational structure, main company accounts, foreign trade activities, market orientation, local sourcing strategies and workforce composition. For each firm, foreign and domestic, we know the number of foreign full time employees belonging to the following three categories; (i) production workers; (ii) clerks and administrative staff; and (iii) managers, technicians and supervisory staff. For the sake of exposition, we will label these categories as low-skilled workers, mid-skilled workers and high-skilled workers, respectively. It is worth noting that we do not observe the nationality of the employee, nor whether the foreign employee is an intra-firm transferee, a self-initiated foreign worker⁴ (Suutari and Brewster 2000) or an immigrant already established in the host country before the investment took place⁵. Hence, strictly speaking our definition of expatriate is not confined to foreign country national subject to an intra-firm transfer (Edstrom and Galbraith 1977, Hocking et al. 2004) but also includes other categories of foreign workers. Given the relatively low immigration in the covered countries, it is highly likely that most of the foreign workers employed in foreign firms can be considered as expatriates in the ‘classical’ sense of being workers who are transferred (or migrated) within the firm. This is even more likely to happen for the highly skilled foreign workers, since the pool of foreign highly skilled immigrants in SSA countries is rather low (Ratha et al. 2011). In our data we can distinguish foreign firms on the basis of their ownership structure as follows: (i) subsidiaries of MNCs with headquarters in a foreign country and (ii) firms owned by an individual foreign investor, family or business group other than MNCs.

³ Burundi, Burkina Faso, Cameroon, Cape Verde, Ethiopia, Ghana, Kenya, Lesotho, Madagascar, Malawi, Mali, Niger, Nigeria, Mozambique, Rwanda, Senegal, Uganda, United Republic of Tanzania and Zambia.

⁴ This type of workers do not transfer within the same firm, but make their own job arrangements.

⁵ We explicitly take into account in our analysis the possibility that foreign workers might be immigrants already residing in the country rather than intra-firm expatriates. Our parametric analysis controls for the stock of immigrants residing in the host countries.

The number of foreign firms covered by AIS 2010 dataset is around 2400 unities. After dropping observations that have missing values on the dependent variable and on our main covariates of interest and observations from destination countries⁶ for which human capital endowment data are not available, we are left with a final sample of 1428 foreign firms. Most of the firms operate in the manufacturing (747), and service (465) sectors while 109 firms are in the primary sector and 107 are construction firms. It is interesting to note that most investors in Sub-Saharan Africa can be classified as stand-alone investors (693). MNEs subsidiaries are 461 while 274 firms are part of a family or group of companies.

Table A1 in the Appendix reports the number of foreign investors by host country. Note that the three main destinations of foreign investments are Uganda, Kenya and Ghana and that the number of investors originating from Northern and Southern countries is rather balanced (688 vs. 740). The average employment of foreign workers is the highest in Uganda, Mozambique and Tanzania with, 17.7%, 12.4% and 12.3% of the whole firms' workforce, respectively. South-South investors are defined as those investors belonging to a less developed or a developing source/origin country⁷. The relatively large share of South-South investors represents an interesting peculiarity of the recent flows of FDI in the African continent and, more generally a new feature of the global geography of investment flows, which allows researchers to compare different ways of 'doing business' of investors belonging to traditional rich origin countries with those belonging to new emerging markets.

In *Table 2.1* we report some summary statistics of the dependent variable and other characteristics of foreign investors in SSA and distinguish these characteristics according to the origin area, North versus South respectively. The average share of foreign workers in foreign firms is about 9% of the whole workforce. Interestingly, firms from the South employ more foreign workers than those from the North, 11% and 7%, respectively.⁸ The average age and size are higher for Northern firms reflecting the recent investment history of the Southern firms in this area of Africa. Southern firms are on average also more oriented to the local market than Northern firms while they create on average less local partnerships with domestic firms, and generally are less embedded in the local environment as reported by Morrissey and Zgovu (2011). The lower presence of Southern MNCs in this area is showed by the lower share of subsidiaries as compared to the northern MNCs (26% vs. 38%). The information and communication technology (ICT henceforth) stock at the affiliates level – a good proxy of the knowledge intensity of firms – is, as expected,

⁶ We exclude observations on the following three countries: Cape Verde, Niger and Rwanda.

⁷ We adopt the World Bank definition and classify a source country as South when GNI per capita is lower than 12.616\$.

⁸ Coniglio et al. (2014) investigate the heterogeneous labour market effect of North versus South FDI in Sub-Saharan Africa. In particular their study finds that South investors tend to demand a higher number of workers but generally they tend to be less-skilled intensive and pay lower wages. Chinese investors employ a significant share of expatriates at all skills levels.

almost the double for Northern firms compared to Southern ones; this points to a relevant differences in knowledge content of production.

Table 2.1 - Descriptive statistics

VARIABLES	Full sample		North-South Investors (1)		South-South Investors (2)	
	Mean	SD	Mean	SD	Mean	SD
<i>Foreign workers</i>	0.09	0.12	0.07	0.10	0.11	0.13
<i>Age (years)</i>	17.1	16	21.5	18	13	11.4
<i>Size (Nr.empl)</i>	211	646	237	793	187	513
<i>Market intensity</i>	0.82	0.32	0.80	0.33	0.84	0.30
<i>ICT intensity (\$)</i>	5448	64000	7118	81106	3896	36564
<i>Subsidiary</i>	0.32	0.47	0.38	0.48	0.26	0.44
<i>Local partner</i>	0.22	0.41	0.26	0.44	0.19	0.39
<i>Greenfield</i>	0.86	0.34	0.85	0.35	0.87	0.33
<i>Interdependence</i>	0.31	0.46	0.34	0.47	0.29	0.45
<i>Linkages (% input)</i>	20	31	23.8	33.2	18.2	29.5
Observations	1428		688		740	

(1) Foreign investors belonging to developed countries; (2) Foreign investors belonging to other poor or emerging economies;

Methodology and variable description

Our dependent variable, the number of foreign employees, is a count variable with a relatively high proportion of zero values. For this reason we employ a Negative Binomial model for our estimation on the determinants of foreign workers at firm level. In fact, the Negative Binomial method – in contrary to the Poisson model – allows to account for the over-dispersion of the variance, i.e. for cases when the variance of the variable is higher than the mean; as it is the case in the current study.

The specification of the model is the following:

$$\ln Foreign_{nij} = \beta_0 + \beta_1 Firm'_{nij} + \beta_2 CountryControls'_{ij} + \varepsilon_{nij} \quad (1)$$

Where $\ln Foreign_{nij}$ is the dependent variable expressed as the logarithm of total number of foreign workers in firm n , originating from country i with destination in country j . In some estimations, we employ as dependent variable the logarithm of total number of high skilled workers, $\ln ForeignHS_{nij}$.

We test for the importance as determinant of the (log) of the number of foreign workers (and foreign high-skilled workers) of a set of firm-level characteristics, $Firm_{nij}$, and a set of characteristics related to the host and source countries, $CountryControls'_{ij}$. We describe in the section below the covariates included in the empirical analysis.

Firm level variables

As discussed above, foreign workers play a crucial role in complex knowledge-intensive organization. We measure knowledge intensity at the firm level using the value of ICT assets per employee (*ICT intensity*). We believe that this variable is a suitable proxy of the knowledge-base of firms; the higher the need to store, process and exchange knowledge the higher the ICT assets purchased by the firm will be. We use the lagged values⁹ in order to avoid the potential simultaneity with our dependent variable. In addition, we use in some estimations an alternative proxy of knowledge intensity; the lagged value of Intellectual Property (IP) assets per employee (*IP intensity*)¹⁰.

We expect that high knowledge-intensive firms hire a higher number of foreign employees, in particular skilled ones, in order to effectively store, transfer and manage and further develop knowledge flows with parent and/or associate firms. Contrary to previous literature that measures the firm's knowledge intensity at the headquarters level¹¹ (Delios and Beamish 2001, Belderbos and Heijlties 2005, Chang 1995, Riaz et al. 2014), we use information on a firm's knowledge intensity at the foreign productive unit. This measure has the advantage of proxing knowledge intensity precisely at the level of the foreign productive unit rather than the 'potential' knowledge transferring capacity of parent firm at the headquarter level.

As a control for the existence of a strong vertical integration, we use a dummy variable (*Vertical integration*), which takes value of 1 if the firm has an export or import relation with parent or associate firms, or 0 otherwise. Local embeddedness is measured by employing two control variables: the *linkages* with local suppliers expressed as the percentage of inputs acquired from local firms (Belderbos et al. 2001; Amendolagine et al. 2013) and a dummy variable equal to 1 if the firm has a local partner, or 0 otherwise (*Local Partner*). Since market orientation might affect the choice of hiring a local or a foreign worker, we introduce, as a control variable, the share of

⁹ Lagged values are measured as the value of asset at the beginning of the last financial year. Note that when the dependent variable employed in the estimation is the number of foreign highly skilled workers, the issue of endogeneity remains potentially relevant. Skilled workers, including foreign ones, are more likely to be employed by firms to develop and manage the technological content of firms' operations including patents and copyrights assets. Hence, the results in terms of direction of causality of the estimations using the high-skilled variable should be interpreted with the appropriate caution.

¹⁰ We use in the baseline specification the variable *ICT intensity versus IP intensity* for two reasons. The first one is related to the higher risk of endogeneity of this variable in particular with respect to the high skilled workers. Secondly, this variable presents a large number of zeros, since investments in SSA countries have, on average, a low IP content.

¹¹ These studies measure knowledge intensity as R&D assets on sales.

production sold in the host-country market over total sales (*Host-market Importance*). We expect that firms that are more oriented toward host-country markets would employ a relatively lower number of foreign workers than the export oriented one (Peixoto 2001).

The firm's experience in the destination country is measured by using the number of years since the firm was established in the country, *Age* (Harzing 2001, Gaur et al. 2007, Riaz et al. 2014). We also test for the existence of non linear effects of experience on the employment of foreign workers by using the square of the variable age, *Age squared*. The mode of entry is introduced in the model as a dummy variable (*Greenfield*) with value of 1 if the firm is a greenfield investment, and 0 for privatizations or acquisitions. We also test for the relevance of the ownership structure by using the dummy (*Subsidiary*) which takes the value of 1 if the firm is a subsidiary of a parent firm with the headquarter in another country, and 0 if the firm is owned by an individual investor, family or business group. The model includes the *Size* of the firm measured as the logarithm of the number of full time employees. Finally, all regressions include a set of sectoral dummies variables.

Country level variables

The employment of foreign workers in foreign firms might be strongly affected by the socio-economic environment within which the investments take place but also on the socio-economic, linguistic and cultural distance between the origin and destination countries.

Clearly, the availability of adequate human capital is a fundamental element of foreign firms choices. This is particularly important for skilled workers (Edstrom and Galbraith 1977, Tung 1982, Torbiorn 1994). In order to control for human capital 'supply' in the host country, we introduce a variable (*Human Capital*) from the World Economic Forum (2010), which measures the level of secondary and tertiary education and training level of the workforce in the destination country. We expect this variable to be negatively related with the share of foreign workers – in particular the skilled ones – employed by foreign firms.

Quite often destination countries impose artificial administrative and legislative impediments to the transfer and hiring of non-national workers, or 'anti-expatriates barriers' as asserted by De Smet (2013). Generally, the higher the visa restrictions are the less easy it is for the foreign workers to enter and work in the destination country. In order to capture these barriers we employ the 'freedom to visit for the foreigners' (*Freedom of mobility*), which is measured as the percentage of foreign countries for which the visa is required (Fraser Institute 2010).

Given that our data does not allow us to distinguish expatriates from other categories of foreign workers, we include, in our estimates, the percentage of immigrants in the population of the host

country (*Migrant Stock*). The higher the stock of immigrants the higher the share of foreign workers employed by all firms, both domestic and foreign ones will be.

We consider as a measure of cultural distance a dummy variable equal to 1 if the source and host country have the same official language, and 0 otherwise (*Common language*).¹²

We also include in our estimates a measure of *Corruption* from the Fraser Institute (2010) measured as the extent to which firms make extra payments or bribe public officials in order to receive favoritisms. As a measure of the relative level of development and of average wages we employ the GDP per capita (*GDPpc*) of the host countries. We expect an ambiguous effect of this variable on the number of foreign workers. On one side a lower GDP per capita signals a weaker endowment of human capital – and hence a higher likelihood of employing expatriates to fill vacancies. On the other side, a lower GDP per capita implies lower wages and hence a higher opportunity cost of hiring foreign workers.

We use the institutional quality (*Institutional quality*) of the source country developed by the WEF (2010). This is a composite index measuring the efficiency and reliability of the public and legal institutions as well as the business standards in terms of property rights protection, regulation and respect of ethical norms. As in Estrin et al. (2009) and Gaur et al. (2007) we introduce in the estimation a measure of institutional quality differences between source and host countries (Δ *Institutional quality*) although, due to lack of data on Sub-Saharan Africa, we are not able to make the distinction between regulative and normative aspects of institutional quality. In addition, we include the GDP per capita difference (Δ *GDPpc*) as a proxy for differences in average wages. Brookfield (2010) reports that 65% of the firms set the salary of expatriates on the basis of the source-country wages to which an expatriates wage premium is added. We expect that, the higher the GDP difference is, the lower the usage of foreign workers by the firm is.

Following the recent rise of South-South foreign direct investments (UNCTAD 2014), several observers and researchers have started to analyze and discuss the different business practices and behaviors of these new important players compared to traditional investors from rich OECD countries (North-South investors). According to Dixit (2012), South-South investors might have an advantage over North-South investors in poor developing countries like Sub-Saharan African countries due to the higher familiarity of these firms with weak institutional frameworks. For instance, the foreign staffing decision of South investors might be less affected compared to Northern ones by institutional quality or cultural distance. In our analysis, we test for different behaviors of investors originating from different groups of origin countries by estimating the model

¹² Several studies show that cultural distance affects the need for firms to use expatriates (Wilkinson et al. 2008; Colakoglu and Caliguri 2008). The assessment of the cultural distance using the GLOBE project method by Dorfman et al. (2009) as in Riaz et al. (2014) was not feasible due to lack of data on the majority of SSA countries.

separately for North and South foreign investors and by using origin country area dummies (*Europe, China, India, South Africa, SSA, MENA Other Asia, North America, Latin America and Other*).

4. Empirical results

Our baseline estimation of the determinants of the demand for foreign workers by foreign firms is reported in *Table 1*. Referring to *Hypothesis 1*, our results show that the coefficient of a firm's knowledge intensity is significant and positive suggesting that knowledge intensive foreign firms in Sub-Saharan Africa intensively employ more foreign workers. The effect of knowledge intensity is slightly stronger when considering only foreign high-skilled workers, who are most likely to serve as the main vehicles of knowledge transfer across borders (see *Model 2*). In *Model 3-4*, we run separate estimates for Southern and Northern firms in order to control for unobserved characteristics that might affect differently the knowledge transfer attitude of these two groups of firms. The result in *Model 3* shows that the knowledge intensity of Northern firms is associated to a greater usage of foreign high skilled workers, while the effect is positive but not statistically significant for Southern firms (*Model 4*). This result may reflect the fact that the firm-level comparative advantage of North-South investors is generally more rooted in their knowledge capacity compared to South-South investors. As a consequence, Northern firms employ significant quantities of foreign high skilled workers and managers in order to transfer knowledge and manage operations abroad. We estimate the same model by using as a proxy for knowledge intensity the Intellectual Property intensity measure at the firm level (*Model 5*). The results are in line with what we found for the *ICT intensity* variable.

It is worthwhile noting that South-South foreign firms use, on average, more foreign workers than northern firms even after controlling for a large set of covariates (the dummy *South* is positive and significant). With respect to the source countries of the investors, results show that investors from Asian countries (China, India and Other Asia) and SSA countries use more foreign workers as compared to European firms¹³ (*Model 6*). This finding is in line with recent studies that have documented that FDI from China and India extensively use foreign workers, both skilled and unskilled, in their investments in SSA countries (Morrissey and Zgovu 2011). With respect to foreign investors originating from other SSA countries, the extensive use of foreign workers may depend on the countries cultural and geographical proximity. The short distance between origin and destination countries, or even sharing the border in some cases, may significantly reduce the costs for firms to deploy expatriate workers. Firms coming from developing countries seem to contribute

¹³ European foreign investors are the reference category in *Table 1*.

relatively less in creating employment opportunities for native workers, in particular at high-skill levels, compared to firms coming from the developed countries.

TABLE.1 Determinants of demand for foreign workers

VARIABLES	(1) Model	(2) Model High-skill	(3) Model North-South	(4) Model South-South	(5) Model	(6) Model
Age	-0.0138** (0.00447)	-0.00704 (0.00458)	-0.0118* (0.00591)	0.00133 (0.00918)	-0.0130** (0.00452)	-0.0135** (0.00440)
Age squared	0.000123* (5.78e-05)	7.32e-05 (5.75e-05)	0.000134+ (7.13e-05)	-0.000313+ (0.000167)	0.000113+ (5.86e-05)	0.000125* (5.64e-05)
Size	0.651** (0.0233)	0.584** (0.0252)	0.624** (0.0356)	0.663** (0.0305)	0.645** (0.0234)	0.659** (0.0232)
Greenfield	0.255** (0.0788)	0.157+ (0.0845)	0.111 (0.120)	0.372** (0.107)	0.259** (0.0785)	0.248** (0.0778)
Host- market importance	-0.116 (0.154)	-0.417* (0.164)	-0.109 (0.234)	-0.120 (0.210)	-0.0963 (0.155)	-0.121 (0.153)
ICT Intensity	0.0266** (0.00865)	0.0298** (0.00957)	0.0527** (0.0134)	0.000724 (0.0113)		0.0289** (0.00856)
Subsidiary	0.0488 (0.0613)	0.0128 (0.0651)	0.0145 (0.0941)	0.0349 (0.0816)	0.0376 (0.0613)	0.0445 (0.0614)
Local Partner	-0.231** (0.0665)	-0.120+ (0.0712)	-0.280** (0.0983)	-0.118 (0.0904)	-0.228** (0.0669)	-0.209** (0.0658)
Human Capital	-1.284** (0.105)	-0.935** (0.113)	-1.494** (0.163)	-1.063** (0.140)	-1.217** (0.103)	-1.341** (0.104)
GDPpc	0.153+ (0.0796)	0.245** (0.0871)	0.207+ (0.123)	0.110 (0.105)	0.130 (0.0794)	0.151+ (0.0798)
Migrant Stock	0.542** (0.0686)	0.524** (0.0754)	0.695** (0.114)	0.434** (0.0865)	0.507** (0.0693)	0.565** (0.0693)
Common language	-0.0707 (0.0575)	0.0336 (0.0614)	0.0664 (0.0856)	-0.227** (0.0776)	-0.0637 (0.0581)	-0.0742 (0.0682)
Freedom of mobility	0.148** (0.0181)	0.124** (0.0197)	0.138** (0.0312)	0.145** (0.0231)	0.146** (0.0183)	0.140** (0.0182)
Institutional quality	-0.890** (0.118)	-0.739** (0.127)	-1.000** (0.181)	-0.849** (0.154)	-0.877** (0.117)	-0.858** (0.117)
China						0.596** (0.119)
India						0.351** (0.0883)
South Africa						-0.133 (0.106)
SSA						0.211* (0.0867)
MENA						-0.137 (0.117)
Other Asia						0.443** (0.143)
North America						0.286* (0.127)
Latin America						0.0524 (0.511)
Other						0.0768 (0.344)
South	0.196** (0.0584)	0.1530* (0.0628)			0.192** (0.0587)	
IP intensity					0.0347** (0.00963)	
Sector dummies	YES	YES	YES	YES	YES	YES
Constant	2.988** (0.576)	0.815 (0.616)	3.401** (0.883)	3.085** (0.762)	3.012** (0.581)	2.954** (0.576)
Inalpha	-0.363** (0.0492)	-0.365** (0.0598)	-0.256** (0.0721)	-0.588** (0.0699)	-0.377** (0.0499)	-0.410** (0.0499)
Observations	1,428	1421	688	740	1400	1428

Dependent variable: Number of foreign workers in the firm and foreign high skill workers. Standard errors in parentheses.

** p<0.01, * p<0.05, + p<0.1

Referring to the *Hypothesis 2*, Table 2 reports the result of estimations including variables capturing the foreign firm's local embeddedness and their degree of vertical integration. In line with what we

predicted, the higher the share of inputs acquired from local suppliers is the lower the share of foreign workers is. In particular, in the context of developing countries, it is likely that inter-organizational interaction with local firms are more effectively managed by local staff which have higher communication skills and a better knowledge of their institutional, economic and social environment. Hence, the result suggests that foreign firms creating local linkages also have a direct positive impact on the employment of domestic workers¹⁴.

We do not find significant differences between firms having import-export relations with parent or associate firms and those who do not. The dummy for vertically integrated firms shows a positive but not statistically significant effect. As predicted, we find that foreign firms that have a local partner, which share by definition the firm ownership, employ a lower share of foreign workers compared to local workers.

We do not find robust evidence on a higher propensity of foreign firms that are more oriented towards the host-country market to use local workers. However, if we restrict the analysis to the number of foreign high-skilled workers, the coefficient measuring the host market importance turns negative and significant at the 5% level (*Table 2, Model 5*). Hence, this result indicates that activities requiring a good knowledge of the local environment such as adaptation and commercialization of products are more likely to be carried out in firms which use a higher share of local skilled workers. This result supports the assumption that local human capital is an efficient choice for firms seeking to adapt their goods and services to local customer needs and tastes. An important corollary of the result is that as Africa becomes over time a growingly important final-consumer market, we should also expect a greater demand by foreign firms of highly skilled local workers. This trend might, in turn, represent a big booster for human capital investments in these countries.

TABLE.2 Determinants of demand for foreign workers

VARIABLES	(1) Model	(2) Model	(3) Model	(4) Model	Model(5) High skill
Age	-0.0153** (0.00469)	-0.0151** (0.00471)	-0.0151** (0.00467)	0.0182 (0.0156)	0.0223 (0.0164)
Age squared	0.000145* (5.78e-05)	0.000139* (5.83e-05)	0.000142* (5.76e-05)	-0.000353 (0.000248)	-0.000431+ (0.000259)
Size	0.623** (0.0269)	0.626** (0.0269)	0.620** (0.0269)	0.659** (0.0231)	0.587** (0.0248)
Greenfield	0.236** (0.0854)	0.233** (0.0855)	0.233** (0.0854)	0.560** (0.168)	0.383* (0.179)
Host- market importance	-0.217 (0.163)	-0.221 (0.164)	-0.202 (0.164)	-0.116 (0.153)	-0.417* (0.163)
ICT Intensity	0.0389** (0.00970)	0.0390** (0.00967)	0.0384** (0.00969)	0.0278** (0.00855)	0.0318** (0.00944)
Subsidiary	0.0124 (0.0696)	-0.0139 (0.0784)	-0.0203 (0.0788)	0.0387 (0.0614)	0.00963 (0.0652)

¹⁴ For a study on the determinants of local sourcing by foreign firms in Sub-Saharan Africa see Amendolagine et al. (2013).

Local Partner	-0.190** (0.0718)	-0.206** (0.0714)	-0.193** (0.0717)	-0.211** (0.0657)	-0.102 (0.0704)
Human Capital	-1.321** (0.117)	-1.371** (0.115)	-1.318** (0.117)	-1.318** (0.105)	-0.949** (0.112)
GDPpc	0.161+ (0.0874)	0.172* (0.0871)	0.161+ (0.0875)	0.140+ (0.0799)	0.212* (0.0872)
Migrant Stock	0.476** (0.0759)	0.479** (0.0756)	0.473** (0.0758)	0.562** (0.0693)	0.538** (0.0753)

TABLE 2 (continued)

VARIABLES	(1) Model	(2) Model	(3) Model	(4) Model	Model(5) High skill
Common language	-0.00874 (0.0779)	-0.0296 (0.0774)	-0.00913 (0.0779)	-0.0780 (0.0683)	0.0276 (0.0733)
Freedom of mobility	0.123** (0.0201)	0.124** (0.0201)	0.122** (0.0201)	0.141** (0.0182)	0.115** (0.0197)
Institutions quality	-0.767** (0.129)	-0.745** (0.129)	-0.762** (0.130)	-0.863** (0.117)	-0.682** (0.126)
Linkages	-0.00258* (0.00105)		-0.00247* (0.00105)		
Vertical Integration		0.0738 (0.0732)	0.0640 (0.0734)		
Age*Green				-0.0344* (0.0161)	-0.0311+ (0.0169)
Age2*Green				0.000509* (0.000255)	0.000536* (0.000265)
Sector dummies	YES	YES	YES	YES	YES
Origin dummies	YES	YES	YES	YES	YES
Constant	2.919** (0.645)	2.815** (0.643)	2.894** (0.645)	2.716** (0.586)	0.617 (0.630)
Inalpha	-0.474** (0.0575)	-0.470** (0.0572)	-0.477** (0.0575)	-0.415** (0.0500)	-0.433** (0.0614)
Observations	1,110	1,113	1,109	1,428	1,421

Dependent variable: Number of foreign workers and foreign high skill workers in the firm.
Standard errors in parentheses. ** p<0.01, * p<0.05, + p<0.1

We find strong support for *Hypothesis 3a* – related to time since the start of operations in the host country – in most of the specifications, which are considered as a dependent variable the whole foreign workforce within the firm. However, the age of the firm seems not to be significant when we restrict the analysis to the use of foreign high skilled workers. One possible explanation for the latter finding might be related to the difficulties in substituting highly skilled expatriates with local skilled employees due to a scarce endowment of suitable human sources in the host country. Overall the results suggest the existence of a significant degree of substitution over time of foreign workers having less specific competences with host country nationals.

The findings reported in *Table 2, Model 4* confirm our *Hypothesis 3b*. Greenfield investments employ, on average, more foreign workers as compared to brownfield investments. In line with the above-specified hypothesis, the higher initial staffing with foreign workers is absorbed over time as the coefficient of the interaction between *age* and *Greenfield* is negative and significant.¹⁵ The result is very similar when we only consider as our dependent variable the number of foreign high skilled workers, though the effect is statistically weaker¹⁶ (*Model 5*). As concluded above, the result

¹⁵ We find evidence of a non-linear effect of the interaction term; the speed of convergence to the staffing practices of brownfield investors is initially faster and then declines.

¹⁶ The p-value of the interaction is close to the 5% significance level (-0.067).

on skilled workers may depend on the more limited availability of adequate human resources in the host country.

Interestingly, our estimates show no significant differences between subsidiaries of MNEs and individual investors in their employment of foreign workers in SSA. One possible reason for this result is related to the fact that also these foreign investors seems to rely heavily on external knowledge flows. In *Table A2* in the Appendix we report the share of foreign investors according to the relative self-declared importance associated to the possibility to access to external technological assistance and know-how transfer from other related companies. These knowledge transfers are, as expected, highly important for most of the subsidiary of MNEs in our sample, but we find that such knowledge flows are equally important to foreign investors belonging to business/family groups.¹⁷ In the last step of our analysis, we investigate the effect of some macro variables that might constrain/affect a firm's decision over the strategic use of expatriates (*Table 3*). The quality and availability of human capital in the host country is negatively associated with the use of foreign workers by foreign firms. The effect of the lagged migration stock variable is positive and significant suggesting, as expected, that the pool of immigrants already residing in the destination country affects staffing decisions of foreign expatriates.¹⁸

TABLE.3 Determinants of demand for foreign workers

VARIABLES	(1) Model	(2) Model	(3) Model	(4) Model
Age	-0.0170** (0.00440)	-0.0133** (0.00439)	-0.0128** (0.00450)	-0.0114* (0.00453)
Age squared	0.000143* (5.82e-05)	0.000112+ (5.78e-05)	0.000118* (5.78e-05)	0.000104+ (5.87e-05)
Size	0.652** (0.0234)	0.654** (0.0237)	0.655** (0.0237)	0.653** (0.0242)
Greenfield	0.271** (0.0789)	0.296** (0.0801)	0.248** (0.0809)	0.279** (0.0825)
Host- market importance	-0.0705 (0.154)	-0.0895 (0.157)	-0.114 (0.158)	-0.111 (0.165)
ICT Intensity	0.0241** (0.00865)	0.0215* (0.00877)	0.0321** (0.00891)	0.0299** (0.00910)
Subsidiary	0.0354 (0.0613)	-0.00883 (0.0622)	0.0707 (0.0622)	-0.00571 (0.0638)
Local Partner	-0.235** (0.0666)	-0.265** (0.0675)	-0.268** (0.0681)	-0.279** (0.0701)
Human Capital	-1.321** (0.105)	-1.175** (0.104)	-1.284** (0.107)	-1.067** (0.104)
GDPpc	0.180* (0.0793)	-0.0175 (0.0759)	0.148+ (0.0826)	-0.0425 (0.0814)
Migrant Stock	0.541**	0.454**	0.581**	0.421**

¹⁷ Data on external assistance and external knowledge transfers is self-reported by the firm. The question of the survey for the subsidiaries is the following: "How important is the assistance of the parent company in the following area: technology and know-how transfer?" The question of the survey for the individual investors is the following: "If the owner has other ongoing operations as a part of a family or business group/trust, how important is the assistance to this company of other associate companies in the business group in the following area: technology and know-how transfer?" The degree of assistance is reported in *Table A2* in the appendix.

¹⁸ Note that the stock of immigrants as a percentage of native population is rather low in all Sub-Saharan African countries. In year 2005 the percentage of foreigners ranges from 0.19 in Madagascar to 2.17 in Ghana. As mentioned before, immigrants in SSA countries are mainly low skilled workers coming from neighboring countries.

	(0.0687)	(0.0687)	(0.0718)	(0.0729)
Common language	-0.0652	-0.0618	-0.0964	-0.0520
	(0.0578)	(0.0589)	(0.0588)	(0.0609)
Freedom of mobility	0.161**	0.116**	0.143**	0.118**
	(0.0178)	(0.0177)	(0.0186)	(0.0187)

TABLE 3 (continued)

VARIABLES	(1) Model	(2) Model	(3) Model	(4) Model
Institutional quality	-0.912**		-0.841**	
	(0.118)		(0.119)	
Corruption		-0.217**		
		(0.0472)		
Δ GDPpc			-0.0928**	
			(0.0207)	
Δ Institutional quality				-0.0435
				(0.0389)
Sector dummies	YES	YES	YES	YES
Constant	3.045**	1.843**	3.119**	1.067*
	(0.578)	(0.547)	(0.596)	(0.534)
Inalpha	-0.353**	-0.315**	-0.378**	-0.320**
	(0.0491)	(0.0485)	(0.0506)	(0.0498)
Observations	1,428	1,428	1,365	1,328

Dependent variable: Number of foreign workers in the firm. Standard errors in parentheses

** p<0.01, * p<0.05, + p<0.1

We find evidence of an important role played by visa and immigration restrictions – as measured by our variable *Freedom of mobility*. Higher barriers for entry and costly bureaucratic practices for foreigners, hamper the use of expatriates by foreign firms.

TABLE.4 Determinants of demand for foreign workers. The impact of wage differential

VARIABLES	(1) Model	(2) Model	(3) Model	(4) Model	(5) Model	(6) Model
	North-South	South-South	North-South	South-South	North-South High skill	South-South High skill
Age	-0.0107+	0.00256	-0.00900	0.00841	-0.00535	0.00538
	(0.00594)	(0.00939)	(0.00605)	(0.0103)	(0.00629)	(0.0104)
Age2	0.000127+	-0.000350*	0.000114	-0.000404*	7.36e-05	-0.000216
	(7.22e-05)	(0.000170)	(7.28e-05)	(0.000193)	(7.29e-05)	(0.000188)
Size	0.630**	0.676**	0.647**	0.675**	0.556**	0.613**
	(0.0358)	(0.0306)	(0.0366)	(0.0318)	(0.0402)	(0.0319)
Greenfield	0.0913	0.353**	0.150	0.414**	0.0379	0.288*
	(0.120)	(0.109)	(0.122)	(0.114)	(0.136)	(0.113)
Host-market importance	-0.107	-0.129	-0.168	-0.274	-0.576*	-0.158
	(0.234)	(0.211)	(0.241)	(0.227)	(0.254)	(0.227)
ICT Intensity	0.0474**	0.00766	0.0517**	0.0164	0.0343*	0.0361**
	(0.0130)	(0.0114)	(0.0134)	(0.0123)	(0.0148)	(0.0125)
MNEs Subsidiary	0.0209	0.0676	-0.0151	0.0358	0.0806	-0.109
	(0.0947)	(0.0808)	(0.0987)	(0.0856)	(0.104)	(0.0842)
Local Partner	-0.278**	-0.185*	-0.258*	-0.241*	-0.138	-0.193+
	(0.0986)	(0.0937)	(0.101)	(0.0974)	(0.109)	(0.100)
Human capital	-1.325**	-1.024**	-1.204**	-0.998**	-0.906**	-0.621**
	(0.130)	(0.114)	(0.131)	(0.118)	(0.146)	(0.119)
Migrant Stock	0.722**	0.457**	0.502**	0.480**	0.712**	0.399**
	(0.114)	(0.0925)	(0.115)	(0.106)	(0.128)	(0.106)
Common language	0.0641	-0.429**	0.0697	-0.397**	0.0809	-0.186*
	(0.0859)	(0.0854)	(0.0878)	(0.0895)	(0.0973)	(0.0889)
Freedom of mobility	0.121**	0.127**	0.0969**	0.0886**	0.0776*	0.0771**
	(0.0290)	(0.0237)	(0.0305)	(0.0249)	(0.0323)	(0.0259)
Institutional Quality	-0.918**	-0.635**			-0.793**	-0.256
	(0.175)	(0.148)			(0.201)	(0.156)
Human capital (origin country)					-0.0704	0.291**
					(0.152)	(0.0943)
Δ GDPpc	-0.107	-0.314**	-0.341+	-0.412**	-0.00823	-0.345**
	(0.157)	(0.0574)	(0.204)	(0.0752)	(0.235)	(0.0653)
Institutional quality (origin)			0.0562	0.149		

country)			(0.0919)	(0.0977)		
Constant	4.550** (0.908)	3.390** (0.696)	1.854** (0.688)	0.671 (0.556)	3.158** (1.071)	-0.333 (0.812)
Inalpha	-0.250** (0.0720)	-0.681** (0.0748)	-0.214** (0.0710)	-0.666** (0.0770)	-0.160+ (0.0845)	-0.939** (0.104)
Observations	686	679	674	608	670	606

Dependent variable: Number of foreign workers in the firm. Standard errors in parentheses. ** p<0.01, * p<0.05, + p<0.1

Interestingly, countries with a higher level of corruption – i.e. with a lower value of variable *Corruption* in our analysis – attract also a higher number of foreign workers. A more general measure of institutional efficiency (*Institutional quality*) gives the same results. This finding suggests that foreign workers are used extensively by foreign firms investing in countries with relatively higher corruption and institutional dysfunctions. A lower quality of institutional quality and a higher intensity of corruption might induce firms to use a larger share of foreign workers in order to maintain an adequate level of control, monitoring and coordination of the productive unit with the parent company.

In *Table 4, Model 3*, we investigate the effect of GDP per capita differences between source and host countries on the use of foreign workers. This variable is a proxy for differences in average wages between the two countries. The result shows that the larger the GDP per capita difference is, the lower the usage of foreign workers by foreign firms will be. The finding confirms the importance of the cost of expatriates in terms of wages – mostly paid as a premium over wages prevailing in the original country. When the wage gap is high, foreign firms find it more profitable employing a domestic worker instead of transferring a foreign worker.

In *Table 4*, we estimate separately our model on the determinants of foreign workers for North-South and South-South investors. Interestingly firms originating from developing source countries are more sensitive to wage differentials. The results show that the $\Delta GDPpc$ coefficient is negative and significant only for firms coming from Southern countries. This finding reveals that these firms are able/willing to substitute more easily foreign and local workers compared to Northern investors for which foreign staffing practices are less elastic to the relative costs of expatriates. North-South investors generally are more likely to possess specific characteristics that explain – as the positive and significant coefficient on the variable *ICT intensity* suggest – their higher rigidity to substitute foreign workers with local human resources. However, note that $\Delta GDPpc$ might also capture unobserved country effects – related to their level of development – other than wage differential that are related to the use of foreign workers. In addition we consider in our estimations measures of *Institutional quality* and *Human capital* endowment of the source country. These controls do not seem to be statistically related to our dependent variable(s) – with the partial exception of *Model 6* in *Table 4* where we find that a higher endowment of human capital in the source country of the Southern investors is positively associated with the number of high-skilled

expatriates employed. More importantly, the results of GDP per capita differential remain robust to the inclusion of these variables, increasing our confidence on the accuracy of this proxy.

4. Conclusion

The role of expatriates in international business has been widely acknowledged and investigated in management research (Galbraith and Edstrom 1976, 1977, 1994; Kobrin 1988; Hebert et al. 2005) in the past decades but surprisingly few papers have attempted to empirically investigate the specific factors that affect the demand of foreign workers in foreign operations. Even less research effort has been devoted to uncovering these issues in the context of developing countries. In this paper we investigate the determinants of foreign workers using data on 1428 foreign investors from a large sample of both developed and developing economies in 16 Sub-Saharan African countries (UNIDO 2012). To our knowledge this is the first study on expatriates in Africa, a continent that is attracting a large inflow of investments both from rich OECD countries and from ‘Southern’ investors sourcing from emerging and developing economies.

Our study confirms the importance of expatriates as gatekeepers of knowledge within complex international operations even in the context of developing countries. The use of foreign workers is particularly high in Greenfield investments but these effects tend to be absorbed over time. In line with the important role of foreign workers in control and monitoring we find evidence that a larger degree of ‘local linkages’ with the host country economy and a higher orientation toward the host country market is typically associated with a reduced deployment of foreign workers at all skill levels.

Interestingly, we find evidence of a fundamental importance of host country characteristics, in particular, a foreign firm’s tendency to employ a large number of expatriates when the Institutional quality of the host country is low and when corruption is highly pervasive. This last finding lends support to policy effort by policymakers in host countries to improve business conditions in order to maximise the potential benefits deriving from foreign investments inflows.

Our paper is, to our knowledge, the first one which sheds light on a rather different behaviour in the context of developing countries between investors originating from rich countries – here defined as North-South investors – and those originating from emerging countries (such as India and China) or other developing economies – or South-South investors. In this respect we find that on average, and even controlling for a large set of firms’ specific characteristics, investors from other developing countries employ a larger share of foreign workers at all skill levels compared to rich countries investors. The number of expatriates for the latter investors (more) strongly depends on knowledge

intensity of the local productive unit but it is also more sensitive with Institutional quality, corruption levels and human capital endowments of the host country (Dixit 2012). On the contrary, staffing strategies with respect to foreign workers are less ‘price-sensitive’ for Northern investors; in fact, we find that higher wage differentials between source and host countries are negatively associated with the number of foreign workers only for South-South investors, which seems more able or willing to substitute expatriates with host country nationals as the wage gap increases. Given the growing importance in the global geography of international investments of firms from emerging and developing markets these findings brings new insights on their strategic behaviour which calls for further and more in depth analysis, a task that requires future research.

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Appendix

Table A1. Foreign firms by country of destination

COUNTRIES	Nr. firms	Southern Firms	Northern Firms	Foreign workers Share (%)
<i>Burundi</i>	12	2	10	7.5
<i>Burkina Faso</i>	3	1	2	9.4
<i>Cameroon</i>	88	15	73	5.27
<i>Ethiopia</i>	90	41	49	7.1
<i>Ghana</i>	118	67	51	8.78
<i>Kenya</i>	224	90	134	3.9
<i>Lesotho</i>	40	38	2	4.6
<i>Madagascar</i>	855	34	51	2.1
<i>Mali</i>	60	31	29	8.6
<i>Mozambique</i>	101	45	56	12.4
<i>Malawi</i>	19	11	8	5.7
<i>Nigeria</i>	65	37	28	5.7
<i>Senegal</i>	48	10	38	4.9
<i>Tanzania</i>	95	62	33	12.3
<i>Uganda</i>	313	217	96	17.7
<i>Zambia</i>	67	39	28	7.38
Total	1428	740	688	100

Source: UNIDO (2011)

Table A2. Foreign firms: knowledge transfer and technological assistance from parent/headquarters or associated firm.

<i>Knowledge transfer intensity</i>	Subsidiaries % total firms	Individual investors % total firms
<i>Not received</i>	3.7	27.2
<i>Not important</i>	3.3	7
<i>Slightly important</i>	5.4	7
<i>Important</i>	24.3	24.8
<i>Very important</i>	35.6	24.7
<i>Crucial</i>	27.6	8.9
Total number of firms	424	684

Source: UNIDO (2011)

Table A5. Variables employed in the empirical analysis

<i>Variables</i>		<i>Definition</i>		<i>Source</i>	
Dependent variables					
$\ln Foreign_{nij}$	Logarithm of number of foreign workers			African Investment Survey (AIS 2010)	
$\ln ForeignHS_{nij}$	Logarithm of number of high skill foreign workers			--\	
		<i>Mean</i>	<i>SD</i>		
Firm-level covariates					
<i>ICT Intensity</i>	ICT assets per employee (one-year -lagged).	5,448\$	64,000\$	--\	
<i>IP Intensity</i>	Intellectual property per employee (patents, software, copyrights) one-year -lagged.	1,029\$	17,307\$	--\	
<i>Age</i>	Number of years since creation.	17.1	16	--\	
<i>Age squared</i>	<i>Age</i> squared.	543	1177	--\	
<i>Vertical Integration</i>	Dummy=1 if the firm has import - export exchanges with the parent firm, 0 otherwise.	31%	46%	--\	
<i>Linkages</i>	% of inputs acquired from local firms.	20%	31%	--\	
<i>Local Partner</i>	Dummy=1 if the firm has a local partner, 0 otherwise.	22%	41%	--\	
<i>Host-market Importance</i>	Production sold domestically to total sales.	82%	32%	--\	
<i>Greenfield</i>	Dummy=1 if the firm is a greenfield investment, 0 otherwise.	86%	34%	--\	
<i>Subsidiary</i>	Dummy=1 if the firm is a subsidiary of a MNC, 0 otherwise.	32%	47%	--\	
<i>Size</i>	Logarithm of the number of full time employees.	4.21	1.34	--\	
<i>South</i>	Dummy=1 if the firm comes from the southern region, 0 otherwise.	52%	50%	--\	
<i>Sector</i>	Sector dummy (19 sectors with reference agriculture and fishery).			--\	
Macro-level covariates					
<i>Human Capital</i>	(5th pillar): level of higher education and training, in 2009. Composite indicator assessed using: (a) Secondary enrolment, (b) Tertiary enrolment, (c) Quality of educational system, (d) internet access in schools. The index ranges from 1 to 7.	2.97	0.37	Global Competitiveness Report (2009-2010) WEF	
<i>Institutional quality</i>	Composite index of efficiency of the public and legal institutions (1st pillar) in destination countries. Better institutions have higher index. The index ranges from 1 to 7.	3.47	0.27	--\	
<i>Institutions quality (origin countries)</i>	<i>Institutional quality</i> in origin countries. (1 to 7).	4.55	0.72	--\	
<i>ΔInstitutional quality</i>	Difference in institution index between origin and destination	1.08	0.78	--\	
<i>Human Capital (origin countries)</i>	<i>Human Capital</i> level in origin countries. (1 to 7).	4.59	0.77	--\	
<i>Freedom of mobility</i>	Index based on % of countries with no visa restrictions. See method by Lawson and Lemke (2012). Ranges 0 to 10.	2.5	1.78	Economic Freedom of the World (2009)	
<i>Corruption</i>	Extra payments/bribes/favouritism: based on the Global Competitiveness Report question: "In your industry, how commonly would you estimate that firms make undocumented extra payments or bribes. Countries with a higher corruption degree are given lower rates. The index ranges from 0 to 10.	3.48	0.66	--\	
<i>Migrant Stock</i>	% of immigrants on the total population in the destination country in 2005.	1.05	0.46	World Development Indicators (WB)	
<i>GDPpc</i>	Logarithm of GDP per capita in 2009	7.42	0.43	--\	
<i>ΔGDPpc</i>	Difference between GDPpc between origin and destination Country 2009 (in logarithm).	2.38	1.43	--\	
<i>Common language</i>	Dummy=1 if origin and destination country share the same official language, 0 otherwise.	63%	48%	CEPII	

Table A3. Correlation matrix. Firm variables

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	
<i>ICT intensity</i>	(1)	1									
<i>IP intensity</i>	(2)	.27	1								
<i>Age</i>	(3)	.11	.16	1							
<i>Vertical Integration</i>	(4)	.048	.078	.11	1						
<i>Linkages</i>	(5)	.016	-.046	.11	-.084	1					
<i>LocalPartner</i>	(6)	.034	-.033	.09	-.047	.15	1				
<i>Host-Market importance</i>	(7)	.094	.032	.044	-.189	-.045	.084	1			
<i>Greenfield</i>	(8)	.01	.016	.035	-.07	.01	-.031	.024	1		
<i>Subsidiary</i>	(9)	.087	.14	.12	.51	-.123	-.132	-.143	-.119	1	
<i>Size</i>	(10)	.12	.14	.28	.17	-.123	-.132	-.141	-.142	.216	1

Table A4. Correlation matrix. Country variables

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	
<i>GDPpc</i>	(1)	1								
<i>Migrant Stock</i>	(2)	.172	1							
<i>Common language</i>	(3)	-.048	-.04	1						
<i>Freedom of Mobility</i>	(4)	.038	.30	.136	1					
<i>Corruption</i>	(5)	-.016	.08	-.16	-.085	1				
<i>Institutional quality</i>	(6)	.0139	.28	-.086	.27	.69	1			
<i>Institutional (origin country)</i>	(7)	.137	.005	-.091	-.033	-.04	-.023	1		
<i>ΔGDPpc</i>	(8)	.154	-.04	-.167	-.21	.033	-.02	.72	1	
<i>ΔInstitutional quality</i>	(9)	.081	-.093	-.054	-.126	-.279	-.37	.93	.68	1